UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

Date: 4/23/2015
Avantor Performance Materials
CAA Inspection Report

FROM: Mozey (Mozafar) Ghaffari
Environmental Engineer
Air Compliance Branch

Approved by: _____
G. LaVigna, Stationary Source
Section Chief

Date: 5/7/15

Agency Lead Inspector: Mozey Ghaffari
Date of Inspection: 3/31 and 4/1, 2015
AIRS/AFS ID #: NJ000000+AFS ID #3404185442
AIR Permit: NJDEP TV Permit ID: BOP130002
Effective Date: February 8, 2020
NAICS/SIC Code: 325188/2819
Attendees: Katie Dumm, Avantor Compliance Specialist, 908-859-2151
Chris Martin, Avantor EH&S Manager, 908-213-6725

Section I - INTRODUCTION

PURPOSE OF THE INSPECTION

This facility was chosen to conduct a process evaluation to determine if it is subject to the MON (40 CFR 63 Subpart FFFF) and or other EPA air regulations. EPA conducted a FCE at this TV facility.

Facility Background Information

Avantor™ Performance Materials founded as J.T. Baker in 1904, began as a producer of high-purity laboratory chemicals and branched into the pharmaceutical industry through a series of acquisitions by Proctor & Gamble in 1985 and St. Louis-based Mallinckrodt Inc. in 1995.

Avantor's products are used in academic, industry and quality control laboratories for research, and they are used in the manufacturing of pharmaceuticals, medical diagnostic processes and electronics, including semiconductors and LED units.

Process Description:

This facility receives its raw materials via trucks and stores various chemicals such as Acids (Nitric, Sulfuric, Hydrogen chloride), Bases (Sodium Hydroxide and Ammonia), and solvents (Methanol, Hexane, and Methylene chloride). These chemicals, after purification steps, are then transferred to various containers and shipped via trucks to various clients. This facility has numerous buildings (See Appendix) for processes, research, warehouse, and products distribution. Wastewater generated in the plant are being treated in a wastewater treatment plant (See Appendix).

Emissions from the acid and base chemicals are vented to scrubbers (CD1, 2, 3, 4. 5. 6, 8 and 13) operating at 40 gpm water flow rate. The water flow rate is being monitored and recorded continuously. Solvent emissions from the distillers are vented to two cryogenic condensers (CD186 and 187) operating at -100 °F using nitrogen as a condensing media. Nitrogen temperatures are being monitored and recorded continuously. The tanks for treating hexane and methyl chloride emissions are equipped with vapor return lines. This facility has capped out of any MACT regulations by monitoring, calculating and maintaining annual solvent (HAPS) emissions to be below 10 tons per year for single HAP and 25 tons per year for combined HAPs. HAP/VOC emissions from the pilot plant operation and the dryers are vented to two (2) Regenerative Thermal Oxidizer/Scrubbers (CD 182 and 184) operating above 1500 °F.

Three (3) NSPS Subpart Dc affected boilers each rated at 32.7MMBtu/hr burning natural gas as primary fuel and number 2 oil as backup fuel. The facility has not used number 2 oil since 2012.

Two (2) NSPS Subpart IIII affected Emergency diesel generators provide electricity during emergency periods. Facility uses diesel fuel that complies with the sulfur content required by NSPS Subpart IIII.

Section II – ONSITE OBSERVATIONS

OBSERVATIONS

Day1 (3/31/15)

On 3/31/2015, EPA Region 2 inspector Mozafar (Mozey) Ghaffari arrived at the facility around 11:00 AM and met with Mr. Chris Martin and Ms. Katie Dumm. After I presented my credential and stated the purpose of the EPA inspection, I requested an overview of the operation along with a listing of the raw materials and products. Mr. Martin provided me a plant layout drawing (See Apendix). Mr. Martin stated that this facility has two types of processes, one is for chemical reactions to make organic and inorganic salts and the other for purifications to

distill solvents to 99.9% purity. They have dedicated water scrubbers, regenerative thermal oxidizers (RTOs), and cryogenic condensers to control air emissions. I completed a Multi-Media Inspection checklist and I did not find any issues to report to other EPA Programs. I reviewed the annual HAP emission calculations with Ms. Dumm. She showed me an excel file and explained how she does her annual HAP emission calculations. 2014 HAP emissions were calculated to be 2.3 tons for combined HAPs and it below the major HAP source threshold. This facility is capped out of the MON (40 CFR 63, Subpart FFFF) EPA regulation by permit. Ms. Dumm also showed me the annual VOC calculations for 2014, which were 37 Tons.

Ms. Dumm provided me with the 2014 deviation report identifying 10 events where the cryogenic condenser and RTO were bypassed for a short period of time. These events had been reported to NJDEP. Ms. Dumm provided me with a copy of the sulfur content analysis of the diesel fuel used for the emergency generators to demonstrate compliance with the NSPS Subpart IIII. Ms. Dumm provided me access to a database which tracks water flow rate in gpm for all of the scrubbers, temperature of the RTO and the temperature of the cryogenic condenser to demonstrate that the facility is operating within the allowable operating limits identified in the TV permit.

I ended the inspection around 3:00 PM and informed the facility representatives that I would be back the following day to complete the tour of the facility.

Day 2 (4/1/15)
On 4/1/2015, EPA Region 2 inspector Mozafar (Mozey) Ghaffari arrived at the facility around 10:00 AM and met with Mr. Chris Martin and Ms. Katie Dumm We toured the facility around 10:15 AM. The following buildings were toured during the EPA inspection:

Building 110- Salt Manufacturing Building- We met with Mr. Mike Herring, the operator in this building. He told me that they make inorganic and organic salts. In the control room, we were able to observe the Scrubber CD18 flow rate, which was 45 gpm and the Scrubber CD27 flow rate, which was 45 gpm, both of which which were above the minimum allowable permit rate of 40 gpm. He described the processes which included reaction, crystallization, centrifugation and drying.

Building 101- Solvent Purification Room- Outside of this building, I was able to observe several solvent storage tanks for Toluene, Methanol, Acetone, and other solvents. In the building, Mr. Martin showed me five (5) distillation columns with their receivers. The emissions from these distillers are captured and destroyed by two (2) cryogenic condensers which uses nitrogen to operate at

-100 °F. Ms. Dumm was able to show me the operating temperature of the condenser from the control room which was at -100 °F.

Tanker Truck Loading Rack - Mr. Martin showed me the vapor return line which is used during unloading of raw materials from trucks to storage tanks.

Bldg. 103 - Bottling Room - I observed the bottling operations which consisted of filling and packaging of bottles.

Bldg. 97 – The 2 RTOs are located here. From the control room, I was able to observe a temperature reading 1544 °F from RTO #1. These RTOs are equipped with total hydrocarbon CEMS and the emissions were below the permitted level.

Acid Unloading Station Room – The emissions during acid unloading operations are vented to a dedicated scrubber, which must be operated during all unloading operations.

Bldg. 44 - Acid Distillation Room - Nitric acid, HCL, sulfuric acid are purified via distillation process.

Bldg. 101 - Bulk Acid Filling Operation – I observed the filling operation of the acid into storage tanks.

Wastewater Treatment Plant - Mr. Martin provided a summary of the operations to me (See Appendix) and observed no odors during the tour.

Bldg. 47 - Furnace Room - Mr. Martin explained that a slurry of nitric acid is heated in the furnace to generate NOx emissions while it is making its products. NOx emissions from the furnace vent to a three stage NOx scrubber to convert the NOx to NO_2 and some H_2S.

Bldg135 - Boiler Room - Three boilers running on natural gas.

At the end of the tour, we returned to the conference room for a close out meeting. During this meeting, I informed Avantor's officials that EPA will be reviewing all of the documents obtained during the inspection. The inspection ended around 2:30 PM.

Section III – AREAS OF CONCERN

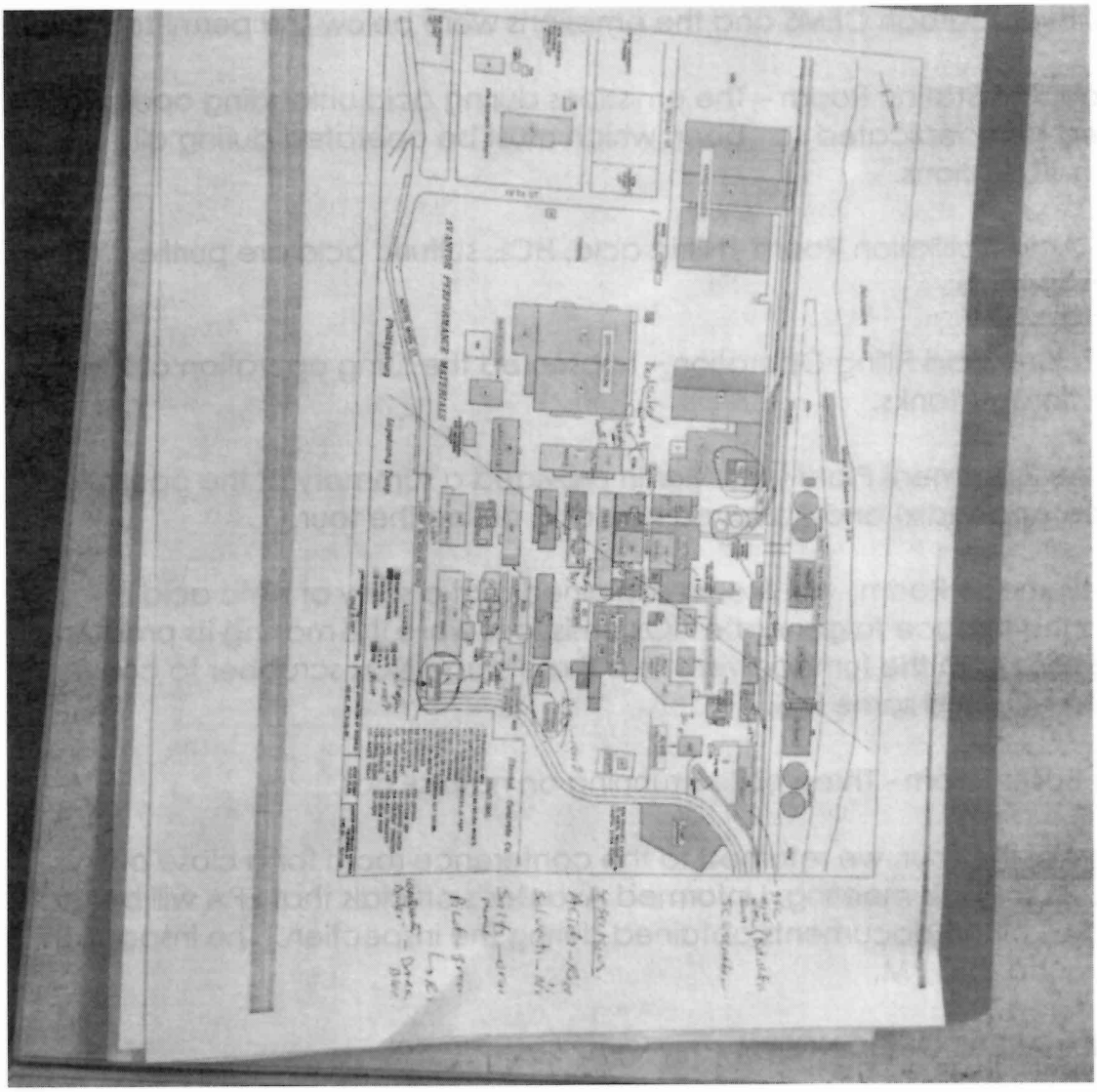
There were no areas of concern other than those already identified to NJDEP through the facility's annual Title V certification. These deviations are being handled by NJDEP.

Section IV – FOLLOW UP

ACB will be contacting NJDEP to get an update about the reported TV permit deviations.

Section V – LIST OF APPENDICES

Plant layout with Building Numbers:



Plant Wastewater Treatment Plant